could be multiplied indefinitely. It is not necessary to point out that all the agitation against animal experiments revolves about the dog and cat. The anti-vivisectionists can gain little attention except as the dog or cat is concerned. People are accustomed to the sacrifice of pigs, sheep and goats for food, and see no reason why these animals should not be sacrificed in the study of disease. The whole question is one of sentiment, which bears not on all animals but on the two animals commonly used as pets. The public must be informed that this bill proposes to make available for medical work only the stray dogs and cats which will otherwise be killed and made into fertilizer. These animals will serve a definite purpose as they will be used in experiments which give information of great value in the study of medicine. The animals receive proper care, and are operated upon only under surgical anaesthesia. At the conclusion of the experiment, the animal is anaesthetized, killed, and a complete autopsy performed.

We may inquire how dogs are usually obtained by the various research laboratories. Dogs are very difficult to secure in most communities, although in some fortunate schools there exist definite agreements by which some city dog pounds furnish the proper number of animals. Some laboratories have made an attempt to breed dogs for use, but this has proved too expensive even for the most richly endowed institution. Purchase of dogs from regular dealers is very expensive, as the dealers usually handle thoroughbred dogs. These dogs are not so resistant as the mongrel toward distemper, which is difficult to eradicate from any large collection of dogs. Most schools are forced to buy dogs from irresponsible persons who collect strays, and sell them to the laboratory. Occasionally stolen dogs are purchased, and this leads to unpleasant complications. The logical and sensible solution of this difficulty is a rational agreement with the neighboring dog pound. It is to be kept in mind that every city pound destroys thousands of dogs and cats every year (4000 dogs per annum in San Francisco). A large research laboratory will scarcely use 200 dogs in the course of a year. We see that only a small fraction of the dogs to be destroyed really come into this discussion. The research laboratories could make very profitable use of a small per cent. of the stray dogs which are annually killed in every large city. There can be no argument but that knowledge of great value can be gained by this experimental work on animals. It seems a proper and justifiable use for certain animals which in any case are bound to be destroyed.

Lack of information concerning actual experimental work and laboratory methods as well as the results obtained by such experiments are in part responsible for the hostile attitude of many intelligent persons towards animal experimentation or "vivisection." The medical profession will accomplish a great good for humanity if it can disseminate accurate information concerning animal experimentation and the great benefits which accrue to humanity through such work.

ORIGINAL ARTICLES

A REPORT OF FIFTY CASES OF TUBERCULOSIS OF THE KIDNEY AND BLADDER CLINICALLY CURED WITHOUT OPERATION.*

By F. S. DILLINGHAM, M. D., Los Angeles.

Surgery in the cases about to be reported has been placed on too firm a footing to be assailed at this late date and I wish to state at the beginning that I firmly believe in surgery and this report is made of cases that have presented themselves with both sides infected or who absolutely refused to be operated. For the sake of brevity no case reports will be given, but a summary of all the cases has been carefully prepared.

Going thoroughly into the past history of these cases the majority state, when closely questioned, that they have had some symptoms of this disease from one to ten years before and that with or without some simple treatment, the symptoms temporarily cleared only to return again. In this class the attacks return at shorter intervals and each attack lasts a little longer till pain drives them to consult some physician.

It is remarkable how long some individual families will allow a hematuria to go almost unnoticed, and sometimes even a nocturnal pollakiuria of every half hour, but pain usually prompts an early consultation. While I admit that the first case has only been clinically cured thirteen years and that this may be due to a quiescent state, still every case began to improve within the first month of treatment, and often within the first week as to their general health and strength as well as their special symptoms. Of the special symptoms the hematuria seemed to clear first and the frequency was the most stubborn, sometimes lasting after all other symptoms, as well as pus and bacilli had ceased.

Several years ago I cystoscoped a case that had typical tuberculous ulceration of the bladder with the usual changes of the ureter orifices, and yet the laboratory reported negative findings. I was so sure of this case that I recatheterized the ureters and this time we ran the electric centrifuge for one hour with the result that we found many bacilli on each slide. Ever since this experience I have insisted on the laboratories allowing their centrifuge to run for one hour, or thirty minutes with the newer extra-high-speed motors. After a reasonable search in some cases no bacilli are found, but a few dots or spores are encountered; in these, a prolonged careful search will practically always show tubercle bacilli. I insist on having an outside laboratory make an independent examination of the specimen at the beginning and end of treatment. Guinea pigs have been used in some of these cases as a final proof, but in the majority of the cases on account of the extra expense to the patient, I have been satisfied with the same careful search of the microscopical slides as was made on the first day the diagnosis was made, par-

* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.

ticularly as this last examination is not made till a month or two after the patients consider themselves entirely relieved of their former symptoms and the bladder remains clear, and this is repeated in two or three months after some physical strain or excess.

Three of these cases have had one child since, each with no return of their tuberculosis. Another case for the last four years has been drinking whisky and although intoxicated the greater part of the time, he has had no return of his symptoms.

All of the men and most of the women have been actively employed at the time they began treatment and 90% have been able to keep at their work during the course of treatment or were able to return within a very few weeks. In those forced to work, nature seems to provide strength to perform the regular every-day duties but promptly resents any additional labor. One case was doing very nicely when an extra walk of about sixteen miles, taken for pleasure, was promptly followed by a return of his hematuria. Backsets were recorded after chopping wood, loading hay and several, following the jar occasioned, by rides either on a horse or in a buggy or automobile.

Two cases developed tuberculous epididymitis in the course of their treatment. In the first case while considering whether he could go to the hospital for the removal of the epididymis, an abscess formed and was opened and drained at the office. All of the cheesy debris was removed and, much to my surprise, the testicular infection gradually subsided. Tubercle bacilli were demonstratd at the time the abscess was opened. By the end of one year there was only the slightest difference in the size of the two testicles and today, with the exception of a slight skin scar with some adhesions of the skin to the epididymis there is no difference on palpation. When the second case occurred I was very glad to see that the results were the same as in the first case and that no infection occurred either in the other testicle or in the prostate. It is seven years since these cases healed and I have seen both within a month and know that they have had no return of the infection in the testicles or bladder.

From the very beginning great care was taken not to get a reaction with the tuberculin. In the average case 1/75,000 mg. was given twice a week and so gradually increased that there was never a local or general reaction. In those cases, complicated by lung infections, this initial dose was reduced to 1/750,000 mg. For instance, I use two minims of a solution, 1 cc. of which represents 1/10,000 mg. or 1/100,000 mgm. respectively. As a guide for increasing the dose in the majority of the cases, I came to rely on the following: A feeling of well-being and less of the tired feeling, increase in weight and appetite, improvement as to the frequency either day or night, or both. Without any suggestion on my part, I came to expect them to mention the fact that following a treatment they felt better, and less tired, and that this feeling would last until about time for their next treatment, when they would begin to lag again. I was sure of progress as soon as this was mentioned and thereafter would strive to gauge the dose so as to produce this effect. If the dose is increased too rapidly at this point, the patient instead of feeling better, feels worse immediately following the treatment, that is, usually by that night or the next morning, and the feeling of well-being will not return, or will just begin to return, by the time the next treatment is due. Along with careful diet and hygienic measures, I am a firm believer in the use of silver nitrate for the bladder irrigations and until most of the pus and irritation has stopped, progress is 100 per cent. faster when some form of cleansing bladder irrigation is used, if used gently and carefully. In some cases relief is afforded by the instillation of gomenol or argyrol. Perhaps some of the poor results claimed for the use of silver nitrate are due to the fact that most authors recommend too strong a solution. I begin with a pint of a 1/50,000 solution in distilled water and frequently find that this is too strong, the rule being not to cause irritation either from the strength of the silver or the rapidity of its injection and when it is safe to begin to stretch the bladder, I do not overstretch more than once or twice at a sitting and am guided by symptoms whether to repeat it at the next visit or to rest for one or two visits. In increasing the strength of the silver, which is done as rapidly as possible, the bladder should never burn,—it is permissible for them to have a slight feeling of warmth for a few minutes, but it should not burn nor cause distress and the majority remark that it makes them feel easier and relieves their irritation; to have the bladder washed. Some patients have complained of having had silver nitrate used in so strong a solution by other physicians that their bladder burned intensely for more than an hour, and that often this condition would be followed by blood and great tenesmus, and their general condition would be made much worse. Two men claim to have fainted on the table following such brutal treatment.

The ages ranged from fourteen to sixty-five with an average of thirty-seven years. Sixty per cent. were males and 40 per cent. were females.

Family history was negative as to a history of tuberculosis in 95% of the cases. Previous history was negative in the majority of the cases. Two cases developed immediately following their first gonnorrhea. One gave the history of having had a severe attack of measles at the age of 26, and presented himself with both sides infected. One gave a history of having passed three stones from the right kidney fifteen years before, and one had had a pleurisy three years before.

Special symptoms: Ulceration of the bladder, did not go deeper than the mucosa in any case, practically all had a velvety condition of the mucous membrane over the trigone, usually worse in the region of the ureter in which the disease was the most active at the time. Golf hole ureters were found on one side in 15% of the cases. Papules with the very summit tipped with

ulcers were found in three cases, and in three cases the ulcers formed narrow ribbon-like bands. Hematuria relieved the severe pain in one case. The majority complain of tiring easily.

A careful record of the temperature and pulse was kept of all cases. In some the toxemia would be expressed as a subnormal temperature, others ran a low grade typhoid chart, while in a few the pulse only would be affected.

It is surprising how fast the pulse would run in the early stages of some of these cases. With the proper dosage of tuberculin, the temperature or pulse or both as the case may be, would gradually return to normal. One case with a normal temperature had an average pulse rate of 150 every afternoon until the clinical symptoms were very much improved when the pulse rapidly returned to normal.

Weight and improvement of weight: All were below the normal weight when they began treatment. One had dropped from 150 lbs. to 96 lbs. Smallest gain was 5 lbs., largest gain 80 lbs., average 25 lbs. Pain was complained of in the back, along the ureters, over the front of the bladder, at the end of the meatus, and even referred to the testicle. The majority of these kidneys were not palpable or tender to ordinary pressure.

Duration before treatment: One year to eleven years, an average of three and a half years.

Frequency: From three minutes to 2½ hrs. in the day time and from once or twice to every five minutes at night.

Hematuria occurred at some time in the history in 75% of the cases, lasting from two days to irregular attacks, the longest interval being eleven years.

Capacity of bladder: At the beginning of treatment varied from one teaspoonful to three ounces. As the bladders healed they were very gradually dilated with silver nitrate solution. Sometimes gomenol or argyrol was instilled at the conclusion of the treatment. It was very gratifying to notice how these bladders regain their normal size as the ulceration and inflammation diminishes.

Complications: Two cases developed tuberculosis of the epididymis. One stricture from a healed tuberculous ulcer almost closed the left ureter. This was before we had special dilators, and by being patient, I was able to dilate the stricture first with the finest filiform, later with ureteral catheters up to 6F, and it has remained this size.

Tuberculosis developed in the nasal cavities and frontal sinus in one case which was referred to a specialist for treatment, but who later reported no improvement of this condition.

There was definite involvement of the lungs with night sweats and clubbed nails in 20% of the cases, most of the others looked well nourished and in perfect health.

All of these cases have gradually returned to their normal life and consider themselves well, although warned not to return to the use of alcoholics or indulge in too much dancing or physical exercise. I will mention just one case to emphasize the necessity of the greatest care in every detail. I was called in consultation to see a case of severe cystitis with hematuria with a frequency of every five to thirty minutes day and night. With the aid of the deepest anesthesia I was able to demonstrate a bladder covered with tuberculous ulcers and the catheterized specimen showed tubercule bacilli on both sides. The bladder capacity was 45 cc. and this would be forced out if the bladder wall was touched or if the anesthetic was not pushed to the limit of safety. This physician wished to treat the patient himself and I wrote out the directions so there would be no mistake. In about three weeks the patient was turned over to me for treatment, with no improvement of any of her symptoms. At first, I could only introduced 4 cc. of silver solution at a time, but at the end of a month she could easily retain 30 cc. of the solution. At the beginning of treatment she weighed 114 lbs. At the time she was discharged she weighed 138 lbs., a gain of 24 lbs., and now she weighs 148½ lbs. but her average bladder capacity is 120 cc. With this exception she feels perfectly well, and has not had any treatment for five years. I feel sure the reason this patient did not improve under her physician's care, was because he attempted to use the tuberculin in too large a dose, and because of her sensitiveness it required too much patience for him to wash her bladder, and yet, we are well repaid for taking this extra time as the improvement can be seen from visit to visit, while as in all chronic diseases the real progress can be noted by comparing their present condition with that of their first visit, or by looking back two or three weeks. Patients are cautioned that they may expect backsets from time to time so as to overcome the mental effects when they do occur. The backsets can usually be traced to some form of excess, but as their whole condition improves, the backsets are not as severe and are at longer intervals until they cease altogether.

No claim to originality in the treatment of these cases is made. The points I wish to emphasize are that with the best hygienic care, compatible with the patients' occupations, cautioning them not to overdo physically, using extreme gentleness in the care of the cystitis and with small doses of tuberculin regularly given and carefully increased, not necessarily to the highest point of toleration for the individual patient, but to the point of greatest clinical gain that a great many who refuse to be operated, or who come with both sides infected, may be relieved, and possibly cured, and certainly may be made more comfortable.

If the same care is taken in searching the specimen from the good side, and the urine centrifuged, with high speed electrical centrifuge for one hour, infection on this side will be proved in a greater number of cases, and I think the majority of you will agree, that in organs as important as the kidneys, that two impaired kidneys can carry on the work of the body better than one crippled kidney. This does not mean when one side has gone on to a large abscess formation, and consists of a bag of pus, or caseous material, but in the

comparatively early cases such as have made up this series, and which we are able to diagnose to-day.

The lung men are not curing the hopeless consumptive, which the laymen can diagnose from across the street, but they are doing wonders with the early cases. We are trained to pick out these early kidney cases, and the general practitioner is becoming educated along these lines, so we see these cases earlier.

THE LIMITATIONS OF ROENTGENOLOGY IN TUMORS OF THE KIDNEY.*

By ALBERT SOILAND, M. D., Los Angeles, Cal.

In harmony with the title of this brief article it may be said that, excepting the condition of stone and hydronephrosis the diagnostic value of the X-ray in all other surgical lesions of the kidney including tumor, is as yet debatable.

As the available literature upon this particular subject is not extensive no references are made, and these remarks are all merely the writer's own opinions, based upon a moderate amount of work along this line.

At the outset it is well to bear in mind that the kidney is not a fixed organ, but is frequently subject to excursions that are as extraordinary as those of the human stomach. This has been forcibly brought to mind, when in searching for the right kidney a distended gall-bladder is erroneously localized for this viscus and later the true kidney is found, its lower half lurking behind the shadow of the pelvic brim.

The left kidney is more stable and also more easily visualized. Naturally the most satisfactory work the Roentgenologist is called upon to perform is the demonstration of greatly increased densities such as mineralized deposits or stones, and as these occur quite frequently in association with kidney enlargement, they may well be included in the discussion of renal tumors.

Next in order are hydronephroses with or without infection. Here a pyelogram will graphically outline this condition and made stereoscopically, markedly enhances its usefulness to the urologist.

Unless in its early stage, tuberculosis of the kidney is ordinarily readily recognized, and as it is usually associated with pus-forming organisms it presents a moth-eaten appearance that is quite characteristic, differing from any other kidney shadow with which the writer is familiar.

Calcified kidneys are occasionally met with and they offer a striking picture, sometimes illuminating the entire cortex and body structures of the organ. Localized calcareous deposits are common and may be differentiated from true stone. Cystic kidneys are less often seen Roentgenologically and are hard to interpret from pyonephrosis, pyelitis, localized hyperemias or enlargements.

To attempt diagnostic efforts beyond this simple classification the Roentgenologist will tread on dangerous ground, and even in well organized stone-free tumors, a negative Roentgen report is as apt to follow as a positive one.

In the list of abscesses, perinephritic, sub-diaphragmatic and retroperitoneal, many difficulties beset one. The kidney may be displaced or enlarged, its shadow cut into and obliterated by gas and overcast by contiguous organs so as to make the outline vague and diagnosis extremely uncertain.

The ureters lend themselves readily to inspection by means of catheters or opaque solutions. No more spectacular vision is known Roentgenologically than that of beholding stereoscopically a tortuous or bifurcated ureter descending from an equally irregular hydronephrotic kidney.

It is of paramount importance that the Roentgenologist exercise due caution before hazarding an opinion of a kidney lesion, particularly in the absence of injections or stone shadows.

A number of intercurrent abdominal shadows may sometimes show a kidney shape on the plate and easily lead to error. It is a rule to have the patient thoroughly purged before examination. This commonly results in the formation of excessive gas high light shadows which cut out all contiguous structures. One is just as apt to obtain a demonstrable kidney outline if the surrounding bowel is filled with its ordinary food content.

To sum up in a few words: X-ray evidence may be considered positive in the localization of stone and the interpretation of pelvic conditions amenable to injection with opaque solutions. Tuberculosis may in favorable cases be recognized. The position and size of kidneys can usually be determined.

Beyond this, it is the writer's opinion, that in all other renal pathology the clinical findings are of more value than the Roentgenologic.

* Read before the annual meeting of the California State Medical Society, Fresno, Cal., April 20th, 1916.

TREATMENT OF SYPHILIS.*

By GRANVILLE MAC GOWAN, M. D., Los Angeles.

Fellow members of the Medical Society, State of California:

It has been thought by the program committee that it is best to have the treatment of syphilis discussed at this meeting, and I was requested to present the subject by a paper, as so many of the conditions which the general practitioner of medicine is required to treat in viscera, nerve tissue, bone, blood vessels and skin, are either of syphilitic origin, or, so closely simulate luetic diseases, that a good working knowledge of the treatment of syphilis, in all of its stages and conditions, is requisite in order that the doctor may succeed in his task.

The experience of many clinicians in many countries has led to the repeatedly expressed opinion that very few physicians in any community are capable of putting into practice the modern methods of combating lues, for the reason that they do not possess the clinical knowledge necessary to recognize syphilis. The student of to-day expects to make his diagnosis through the laboratory, because he has

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